

5.2 Traffic/Circulation

Information contained in this section is summarized from the traffic technical report, *Traffic Impact Analysis for the Dos Colinas Subdivision Project*, prepared by Linscott, Law & Greenspan (LLG) Engineers (July 8, 2010). This document is provided as Appendix B on the attached CD of Technical Appendices found on the back cover of this EIR.

5.2.1 Existing Conditions

5.2.1.1 Existing Street Network

The roadways in the vicinity of the project site (both the CCRC site and affordable housing site) that may be impacted by traffic generated by the proposed project include Tamarack Avenue, Cannon Road, College Boulevard, El Camino Real, and Palomar Airport Road. The following provides a brief description of each of these roadways:

Tamarack Avenue is classified as a Secondary Arterial on the City of Carlsbad Circulation Element. This roadway is an east-west roadway and provides two lanes of travel in each direction.

Cannon Road is classified as a Major Arterial on the City of Carlsbad Circulation Element. East of El Camino Real, this roadway is currently constructed as a three-lane divided roadway.

College Boulevard is classified as a Major Arterial on the City of Carlsbad Circulation Element. This roadway is an east-west roadway. It was assumed that the College Boulevard extension between El Camino Real and Cannon Road would be completed by opening day of the project and was assumed as such in the traffic analysis.

El Camino Real is classified as a Prime Arterial on the City of Carlsbad Circulation Element. This roadway is a north-south roadway.

Palomar Airport Road is classified as a Prime Arterial on the City of Carlsbad Circulation Element. This roadway is an east-west roadway.

5.2.1.2 Analysis Approach and Methodology

Study Area

Based on the anticipated distribution of the project traffic, the specific study area includes the following intersections and street segments. Per SANTEC, the study area should include intersections with 50 peak hour trips or more. The City of Carlsbad's Growth Management Program requires the study area to include facilities carrying 20% or more of the project generated traffic. Based on SANTEC guidelines, Carlsbad Growth Management Program, and other adjacent intersections/street segments, the following intersections and road segments have been studied:

Intersections

- El Camino Real/Tamarack Avenue¹
- El Camino Real/Cannon Road¹
- El Camino Real/College Boulevard¹
- El Camino Real/Faraday Avenue¹
- El Camino Real/Palomar Airport Road¹
- Cannon Road/Faraday Avenue²
- College Boulevard/Faraday Avenue¹
- College Boulevard/Palomar Airport Road¹
- College Boulevard/Project Driveway North/Cantarini Ranch Driveway³
- College Boulevard/Project Driveway South/Cantarini Ranch Driveway³
- Project Driveway/Sunny Creek Road³
- College Boulevard/Cannon Road³

Street Segments

- El Camino Real: Tamarack Avenue to Cannon Road¹
- El Camino Real: Cannon Road to College Boulevard²
- El Camino Real: College Boulevard to Faraday Avenue²
- El Camino Real: Palomar Airport Road to Camino Vida Roble²
- Cannon Road: Faraday Avenue to El Camino Real²
- College Boulevard: Faraday Avenue to El Camino Real²
- College Boulevard: El Camino Real to Cannon Road^{3,4}

The traffic analysis assessed the key intersections and street segments in the project area. The study area intersections and segments were analyzed in the following scenarios:

- Existing
- Existing with Project
- Year 2020
- Year 2020 with Project
- Year 2030
- Year 2030 with Project

The traffic impact analysis was prepared using the 2000 Highway Capacity Manual's (HCM) operation analysis Level of Service (LOS) evaluation criteria. The operating conditions of the study intersections were

¹ Existing Facility-Counts taken from the City of Carlsbad 2008 TMP.

² Counts commissioned by LLG Engineers.

³ Future Facility.

⁴ This segment volume is estimated based on the peak hour/daily relationships along this corridor. See LLG Report.

measured using the HCM LOS designations ranging from A through F. LOS A represents the best operating conditions and LOS F denotes the worst operating conditions.

Signalized and unsignalized intersections were analyzed using the *Intersection Capacity Utilization (ICU)* method for Existing and Existing with Project conditions and the *HCM* method for all of the other scenarios. A more detailed explanation of the ICU and HCM method can be found in the appendices provided on the CD attached to the back cover of this EIR.

Street segments were analyzed on a peak hour basis. The midblock peak hour volumes were utilized to calculate volume to capacity ratio (V/C) for each direction of the street segment. The City of Carlsbad assumes a one-direction capacity of *1,800 vehicles per hour per lane* for through lanes. A LOS is determined by using V/C thresholds.

Lastly, intersection queue lengths were obtained from the *Synchro* (version 7) software package. The 95th percentile intersection queue length (per lane) and the maximum available storage by movement are reported for each intersection. The queue lengths are based on green times and represent estimated lengths, which are difficult to predict accurately. Adjustments to green times can be made to give some movements more priority, and therefore, change the resultant queue length.

5.2.1.3 Existing Traffic

A. Intersections

Table 5.2-1 includes the results of the intersection level of service evaluation for existing conditions. The study area intersections are calculated to currently operate at LOS C or better.

B. Street Segments

Table 5.2-2 includes existing street segment levels of service based on the highest peak hour per lane, taken from intersection peak hour traffic counts, and a per lane capacity of 1,800 Vehicles Per Hour Per Lane (VPHPL). As shown, all street segments currently operate at LOS A.

5.2.2 Threshold for Determining Significance

Appendix G of the CEQA Guidelines is used to provide direction for determination of a significant traffic/circulation impact from the proposed project. For purposes of this EIR, a significant impact would occur if the proposed project would:

- *Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;*

TABLE 5.2-1
Existing Intersection Operations

| Intersection | Traffic Control | Peak Hour | ICU ^a | LOS ^b |
|--|-----------------|-----------|------------------|------------------|
| 1. El Camino Real / Tamarack Avenue | Signal | AM | 0.614 | B |
| | | PM | 0.549 | A |
| 2. El Camino Real / Cannon Road | Signal | AM | 0.549 | A |
| | | PM | 0.712 | C |
| 3. El Camino Real / College Boulevard | Signal | AM | 0.547 | A |
| | | PM | 0.547 | A |
| 4. El Camino Real / Faraday Avenue | Signal | AM | 0.614 | B |
| | | PM | 0.604 | B |
| 5. El Camino Real / Palomar Airport Road | Signal | AM | 0.506 | A |
| | | PM | 0.724 | C |
| 6. Cannon Road / Faraday Avenue | Signal | AM | 0.500 | A |
| | | PM | 0.600 | B |
| 7. College Boulevard / Faraday Avenue | Signal | AM | 0.539 | A |
| | | PM | 0.540 | A |
| 8. College Boulevard / Palomar Airport Road | Signal | AM | 0.545 | A |
| | | PM | 0.692 | C |
| 9. College Boulevard / Project Driveway North/Cantarini Project Driveway | Signal | AM | NA ^c | NA |
| | | PM | NA | NA |
| 10. College Boulevard / Project Driveway South/ Cantarini Project Driveway | Signal | AM | NA | NA |
| | | PM | NA | NA |
| 11. Project Driveway / Sunny Creek Road | Signal | AM | NA | NA |
| | | PM | NA | NA |

Notes: a Intersection Capacity Utilization

b. Level of Service

c. Intersection not yet built.

Source: LLG Engineers, 2010.

| ICU | LOS |
|-------------|-----|
| 0.0 ≤ 0.55 | A |
| 0.56 - 0.64 | B |
| 0.65 - 0.73 | C |
| 0.74 - 0.82 | D |
| 0.83 - 0.91 | E |
| > 0.92 | F |

TABLE 5.2-2
Existing Peak Hour Street Segment Operations

| Street Segment | Direction | Peak Hour | Existing Capacity ^a | Existing | | |
|---|-----------|-----------|-------------------------------------|----------|------------------|------------------|
| | | | | Volume | V/C ^b | LOS ^c |
| El Camino Real | | | | | | |
| Tamarack Avenue to Cannon Road | NB | AM | 3,600 | 310 | 0.086 | A |
| | | PM | 3,600 | 1260 | 0.350 | A |
| | SB | AM | 3,600 | 1360 | 0.378 | A |
| | | PM | 3,600 | 610 | 0.169 | A |
| Cannon Road to College Boulevard | NB | AM | 5,400 | 720 | 0.133 | A |
| | | PM | 5,400 | 2200 | 0.407 | A |
| | SB | AM | 5,400 | 2340 | 0.433 | A |
| | | PM | 5,400 | 1030 | 0.191 | A |
| College Boulevard to Faraday Avenue | NB | AM | 5,400 | 690 | 0.128 | A |
| | | PM | 5,400 | 1240 | 0.230 | A |
| | SB | AM | 5,400 | 1780 | 0.330 | A |
| | | PM | 5,400 | 700 | 0.130 | A |
| Palomar Airport Road to Camino Vida Roble | NB | AM | 5,400 | 1140 | 0.211 | A |
| | | PM | 5,400 | 1270 | 0.235 | A |
| | SB | AM | 5,400 | 1140 | 0.211 | A |
| | | PM | 5,400 | 1130 | 0.209 | A |
| Cannon Road | | | | | | |
| Faraday Avenue to El Camino Real | EB | AM | 3,600 | 270 | 0.075 | A |
| | | PM | 3,600 | 860 | 0.239 | A |
| | WB | AM | 3,600 | 940 | 0.261 | A |
| | | PM | 3,600 | 340 | 0.094 | A |
| El Camino Real to College Boulevard | EB | AM | 3,600 | 210 | 0.058 | A |
| | | PM | 3,600 | 1070 | 0.297 | A |
| | WB | AM | 1,800 | 1050 | 0.583 | A |
| | | PM | 1,800 | 420 | 0.233 | A |
| College Boulevard | | | | | | |
| Faraday Avenue to El Camino Real | NB | AM | 3,600 | 300 | 0.083 | A |
| | | PM | 3,600 | 490 | 0.136 | A |
| | SB | AM | 3,600 | 660 | 0.183 | A |
| | | PM | 3,600 | 270 | 0.075 | A |
| El Camino Real to Cannon Road | NB | AM | This segment is currently not built | | | |
| | | PM | | | | |
| | SB | AM | | | | |
| | | PM | | | | |

Notes: a Capacity based on 1,800 vehicles per lane per hour

b. Volume to Capacity ratio

c. Level of Service

Source: LLG Engineers, 2010.

| LOS | V/C |
|-----|-----------|
| A | <0.6 |
| B | 0.61-0.70 |
| C | 0.71-0.80 |
| D | 0.81-0.90 |
| E | 0.91-1.0 |
| F | >1.0 |

- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in adequate emergency access; or,
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

In addition, the City of Carlsbad uses both the ICU and HCM analysis methods to determine significant traffic impacts. Under the ICU methodology, a traffic impact is considered to be significant if the addition of project traffic causes an intersection or street segment to decrease worse than LOS D. For intersections or street segments which are currently operating worse than LOS D, a project impact will be considered significant if the project causes the ICU value at an intersection to increase by more than 0.02 or the volume-to-capacity ration at a segment to increase by more than 0.02. The defined thresholds for roadway segments and intersections are defined in Table 5.2-3.

TABLE 5.2-3
Impact Significant Thresholds-ICU

| LOS without Project | Allowable Increase Due to Project | |
|---------------------|--|------------------------|
| | Intersections (V/C) | Roadway Segments (ICU) |
| A, B, C, D | A project's impact is deemed significant if degraded to LOS E or F | |
| E, F | 0.02 | |

Source: LLG Engineers, 2010.

Notes: LOS= Level of Service, V/C= Volume to Capacity Ratio, ICU= Intersection Capacity Utilization

The defined thresholds for the analysis of HCM intersections are defined in Table 5.2-4. If the project exceeds the thresholds in Table 5.2-4, then the project may be considered to have a significant project impact.

TABLE 5.2-4
Impact Significant Thresholds-HCM

| LOS with Project ^a | Allowable Increase Due to Project ^b | |
|-------------------------------|--|---------------|
| | Intersection (Delay) | Segment (V/C) |
| E & F | 2.0 | N/A |

Notes: a. All level of service measurements are based upon HCM procedures for peak-hour conditions.

b. If a proposed project's traffic causes the values shown in table to be exceeded, the impacts are deemed to be significant. These impact changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigations (within the Traffic Impact Study report) that will maintain the traffic facility an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note above), or if the project adds a significant amount of peak hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating significant impact changes.

Delay= Average stopped delay per vehicle measured in seconds for intersections, and LOS= Level of Service.

Source: LLG Engineers, 2010.

5.2.3 Environmental Impacts

The trip generation estimates for the proposed development were based on SANDAG's *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*- April 2002.

5.2.3.1 Project Trip Generation

The CCRC portion of the project will consist of 309 units and includes 62 cottage units, 166 independent living units, and 81 assisted living units. The affordable housing site consists of 29 affordable multi-family units. As depicted in Table 5.2-5, the total project is calculated to generate approximately 1,340 average daily trips (ADT) with 27 inbound/46 outbound trips during the AM peak hour and 62 inbound/40 outbound trips during the PM peak hour.

TABLE 5.2-5
Project Trip Generation

| Use | Size | Daily Trip Ends (ADT) | | AM Peak Hour | | | | PM Peak Hour | | | |
|-----------------------|-----------|--------------------------|---------------------|----------------|-----------------|--------|-----|----------------|------------------|--------|-----|
| | | Rate | Volume ^d | % of ADT | In: Out Splt | Volume | | % of ADT | In: Out Spllt | Volume | |
| | | | | | | In | Out | | | In | Out |
| Western Project Site | | | | | | | | | | | |
| Cottage | 62 units | 4/unit ^a | 250 | 5% | 40%:60% | 5 | 8 | 7% | 60%:40% | 11 | 7 |
| Independent Living | 166 units | 4/unit ^a | 660 | 5% | 40%:60% | 13 | 20 | 7% | 60%:40% | 28 | 18 |
| Assisted Living | 81 units | 2.5/unit ^b | 200 | 4% | 60%:40% | 5 | 3 | 8% | 50%:50% | 8 | 8 |
| Eastern Project Site | | | | | | | | | | | |
| Affordable Housing | 29 units | 8/unit ^c | 230 | 8% | 20%:80% | 4 | 15 | 9% | 70%:30% | 15 | 7 |
| Total: | | | 1,340 | | | 27 | 46 | | | 62 | 40 |

Notes: a. Retirement Community rate based on Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (SANDAG)- April 2002.

b. Congregate Care Facility rate based on Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (SANDAG)- April 2002.

c. Multi-family (6-20 DU/acre) rate based on Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (SANDAG)- April 2002.

d. ADT volumes are rounded to the nearest 10.

Source: LLG Engineers, 2010.

A. CCRC Site

The proposed 62 cottage units consist of one and two bedroom dwelling units with attached garages. No centralized dining or other recreational facilities are proposed; however, the residents of the cottages will be able to utilize the common dining and recreation facilities provided for the independent living units. Therefore, the *Retirement Community* trip rate was used as it best fits the description of this land use.

Similar to the cottage units, the proposed 166 independent living units consist of one and two bedroom dwelling units. Common areas for dining and recreational activities are provided within each of the

buildings; therefore, similar to the cottages, the independent living units are expected to generate minimal traffic. The *Retirement Community* trip rate was also used for this land use.

The proposed 81 assisted living units are designed for the elderly and include assistance requirements for patients with special conditions. While this land use also features common areas for dining and recreational activities, due to the nature of the medical care provided, the use is expected to generate less traffic than the independent living units and cottages. As such, the *Congregate Care Facility* trip rate was used.

B. Affordable Housing Site

The proposed 29 affordable housing units consist of one, two, and three bedroom units. The *Multi-family* trip rate was used as it best fits the description of this land use.

5.2.3.2 Trip Distribution/ Assignment

The project generated traffic was distributed and assigned to the traffic study area. The distribution of project generated traffic was based on site access parameters, roadway system characteristics, proximity to the freeways, and population densities. Two separate distributions were developed to account for the future extension of Cannon Road. Figure 5.2-1 and 5.2-2 depict the project traffic assignment without and without the Cannon Road extension, respectively.

5.2.3.3 Project Plus Existing Conditions

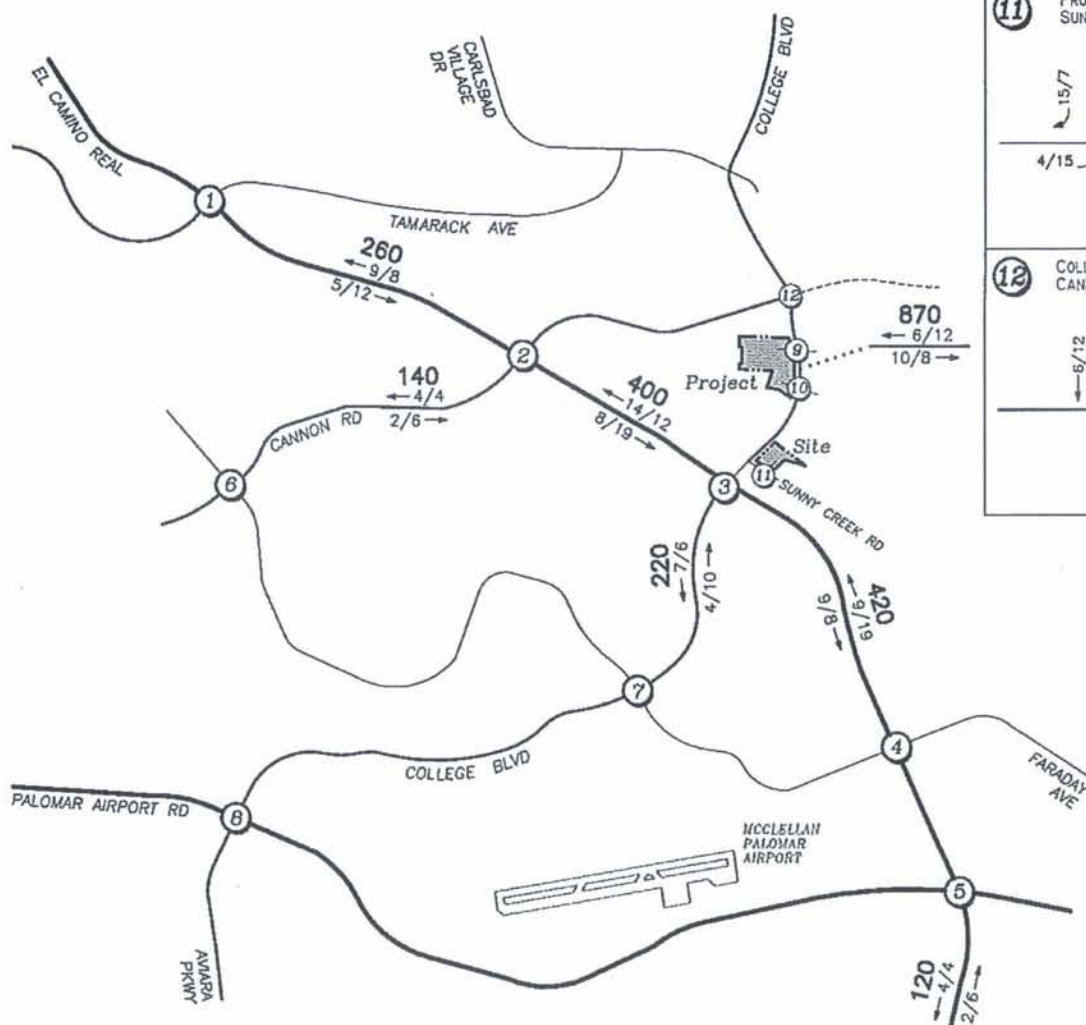
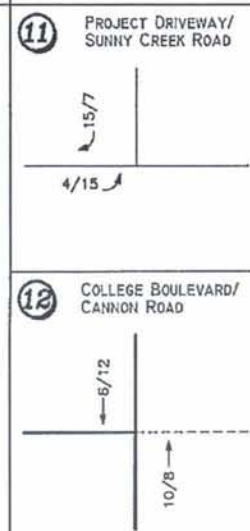
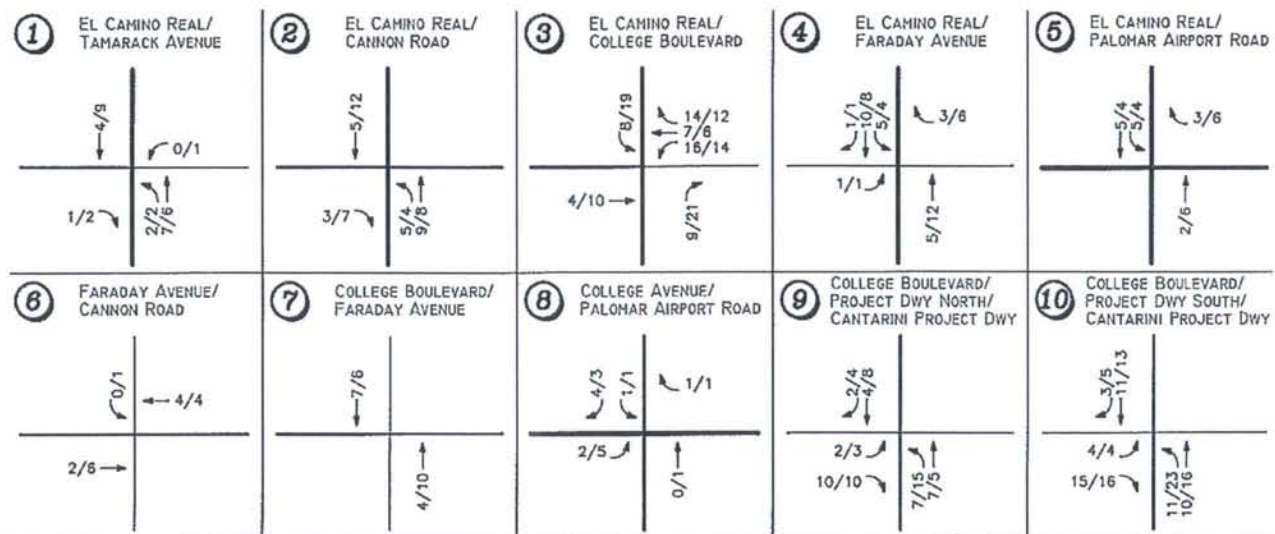
This section includes an evaluation of existing average daily traffic and peak hour volumes at traffic study area street segments and intersections with project only traffic added. In order to accurately account for near-term conditions, adjustments to the existing traffic volumes were performed to account for the introduction (i.e., construction) of College Boulevard between El Camino Real and Cannon Road. Figure 5.2-3 depicts the future conditions and Figure 5.2-4 depicts the existing volumes rerouted due to the College Boulevard extension.

A. Intersections

Table 5.2-6 shows existing plus project intersection peak hour levels of service. With the addition of project traffic and rerouting due to the addition of College Boulevard, all of the study area intersections are calculated to continue operating at LOS C or better. A reduction in delay will occur at the El Camino Real/Cannon Road intersection due to the presence of College Boulevard as an alternate route. The College Boulevard extension will attract trips from El Camino Real since it will serve as a more direct route and hence the reduction in delay at El Camino Real/ Cannon Road. Based on the established significance criteria, no significant project related impacts would occur.

B. Street Segments

Figure 5.2-5 shows existing with project traffic volumes (without Cannon Road extension). Table 5.2-7 shows street segment levels of service with project traffic added to existing volumes on these segments. With the addition of project traffic, street segments are calculated to continue operating at LOS A. Volume reductions would occur due to the construction of College Boulevard between Cannon Road and El



SOURCE: Linscott Law & Greenspan, 2010

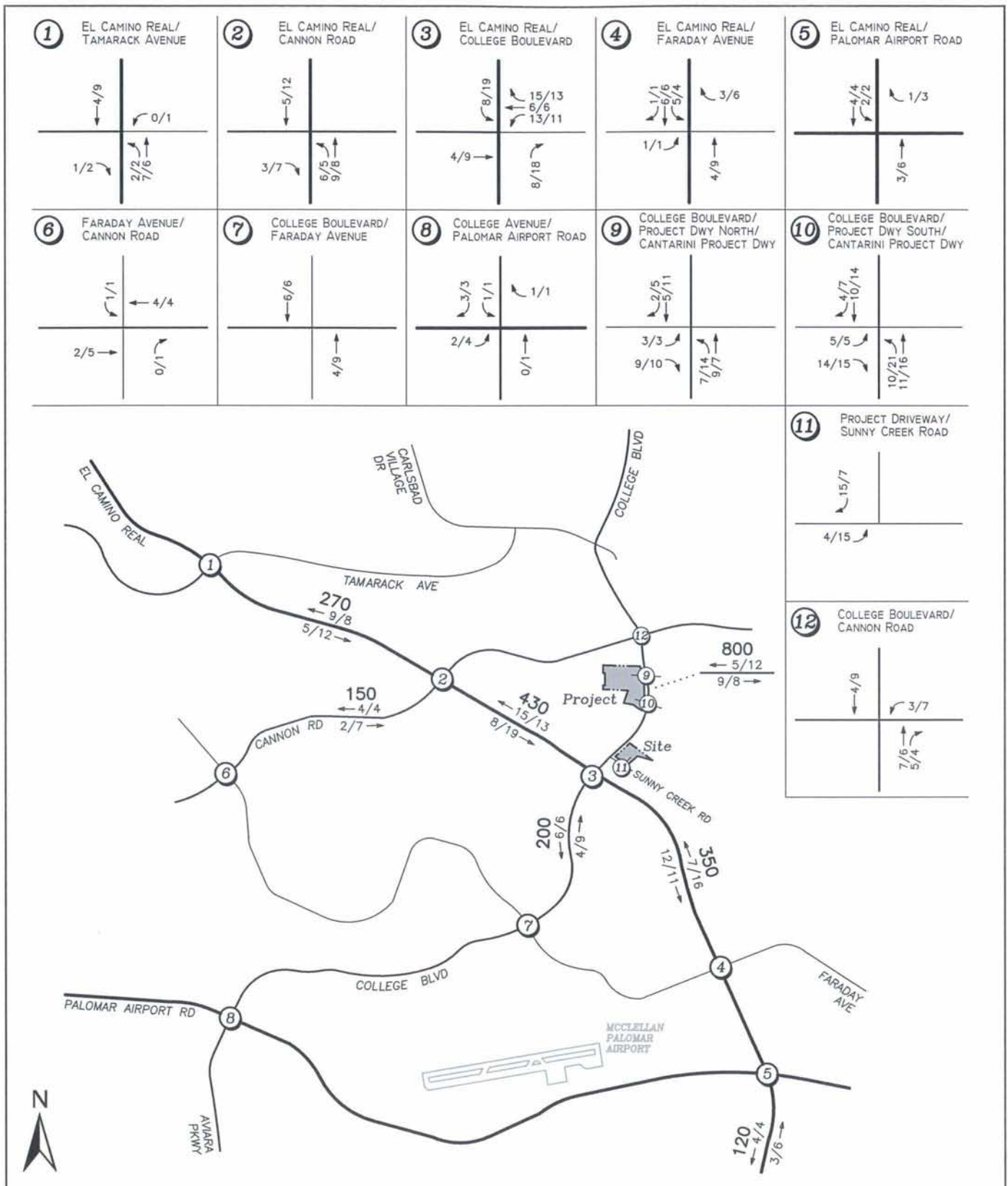
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Project Traffic Volumes Without Cannon Road Extension

FIGURE
5.2-1



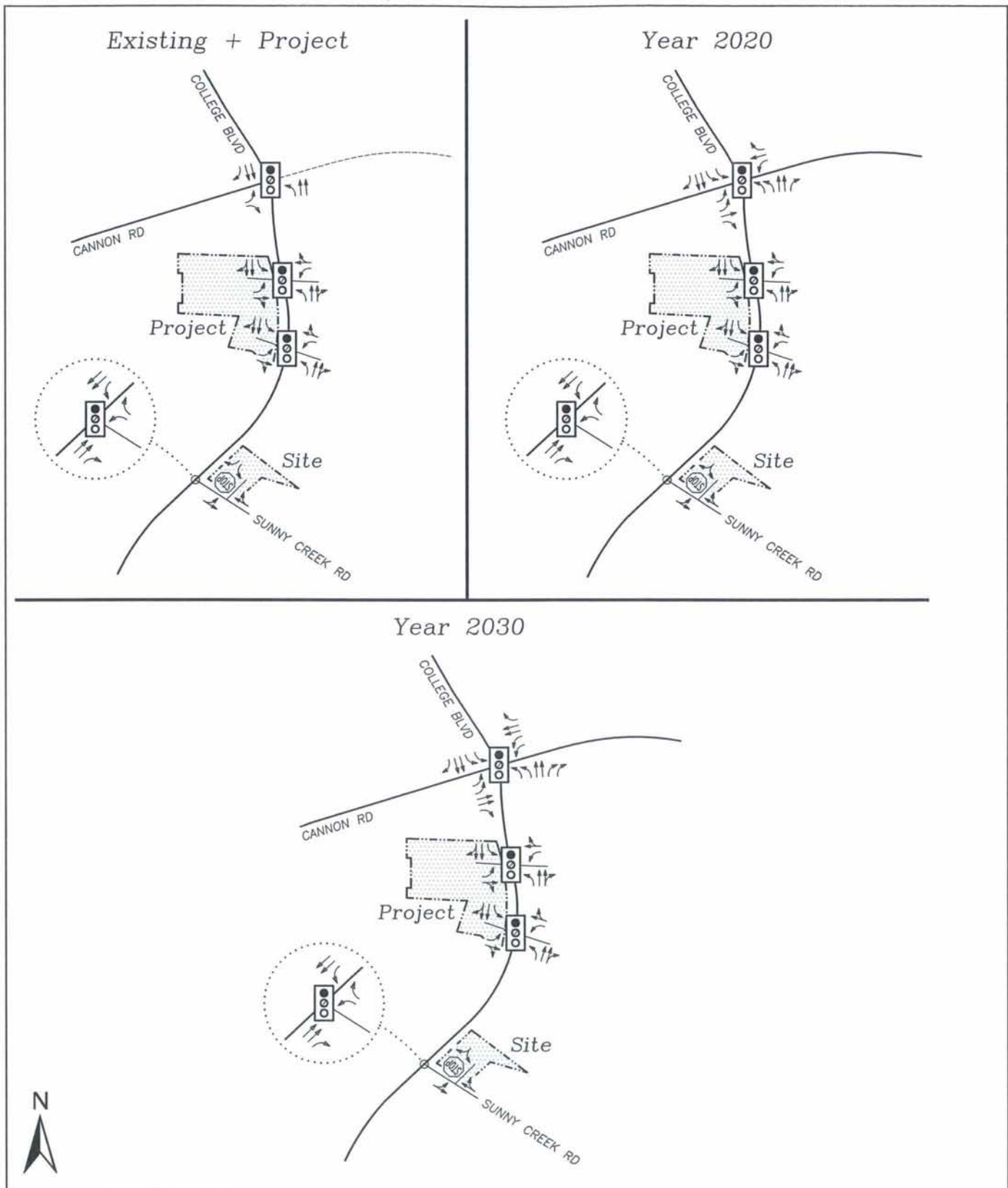
SOURCE: Linscott Law & Greenspan, 2010

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Project Traffic Volumes
With Cannon Road Extension

FIGURE
5.2-2



SOURCE: Linscott Law & Greenspan, 2010

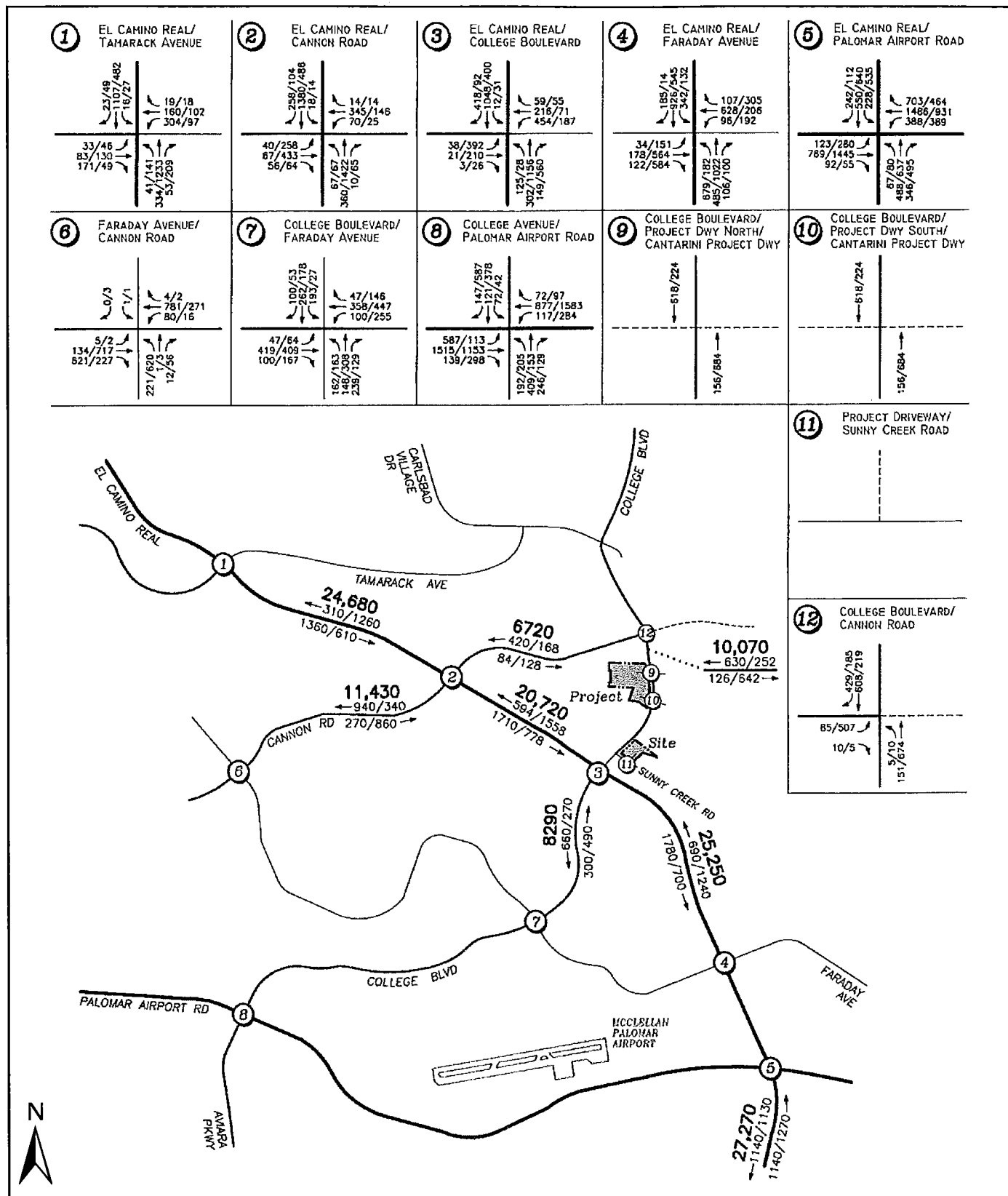
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Future Conditions Diagram

FIGURE
5.2-3



SOURCE: Linscott Law & Greenspan, 2010

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Existing Traffic Volumes With College Boulevard Extension

FIGURE
5.2-4

TABLE 5.2-6
Existing with Project Intersection Operations

| Intersection | Traffic Control | Peak Hour | Existing | | Existing with Project | | Project Δ^c | Significant Project Impact? |
|--|-------------------|-----------|------------------|------------------|-----------------------|-----|--------------------|-----------------------------|
| | | | ICU ^a | LOS _b | ICU | LOS | | |
| 1. El Camino Real/ Tamarack Avenue | Signal | AM | 0.614 | B | 0.615 | B | 0.001 | None |
| | | PM | 0.549 | A | 0.551 | B | 0.002 | None |
| 2. El Camino Real/ Cannon Road | Signal | AM | 0.549 | A | 0.504 | A | -0.450 | None |
| | | PM | 0.712 | C | 0.707 | C | -0.005 | None |
| 3. El Camino Real/ College Boulevard | Signal | AM | 0.547 | A | 0.549 | A | 0.002 | None |
| | | PM | 0.547 | A | 0.592 | B | 0.045 | None |
| 4. El Camino Real/ Faraday Avenue | Signal | AM | 0.614 | B | 0.615 | B | 0.001 | None |
| | | PM | 0.604 | B | 0.605 | B | 0.001 | None |
| 5. El Camino Real/ Palomar Airport Road | Signal | AM | 0.506 | A | 0.507 | A | 0.001 | None |
| | | PM | 0.724 | C | 0.725 | C | 0.001 | None |
| 6. Cannon Road/ Faraday Avenue | Signal | AM | 0.500 | A | 0.500 | A | 0.000 | None |
| | | PM | 0.600 | B | 0.601 | B | 0.001 | None |
| 7. College Boulevard/ Faraday Avenue | Signal | AM | 0.539 | A | 0.539 | A | 0.000 | None |
| | | PM | 0.540 | A | 0.541 | A | 0.001 | None |
| 8. College Boulevard/ Palomar Airport Road | Signal | AM | 0.545 | A | 0.546 | A | 0.001 | None |
| | | PM | 0.692 | C | 0.692 | C | 0.000 | None |
| 9. College Boulevard/ Project Driveway North/ Catarini Project Driveway | Signal | AM | NA ^d | NA | 0.225 | C | – | None |
| | | PM | NA | NA | 0.229 | A | – | None |
| 10. College Boulevard/ Project Driveway South/ Catarini Project Driveway | Signal | AM | NA | NA | 0.258 | A | – | None |
| | | PM | NA | NA | 0.233 | A | – | None |
| 11. Project Driveway/ Sunny Creek Road | TWSC ^e | AM | NA | NA | 0.187 | A | – | None |
| | | PM | NA | NA | 0.187 | A | – | None |
| 12. College Boulevard/ Cannon Road | Signal | AM | NA | NA | 0.426 | A | – | None |
| | | PM | NA | NA | 0.542 | A | – | None |

Notes: a. Intersection Capacity Utilization.

b. Level of Service.

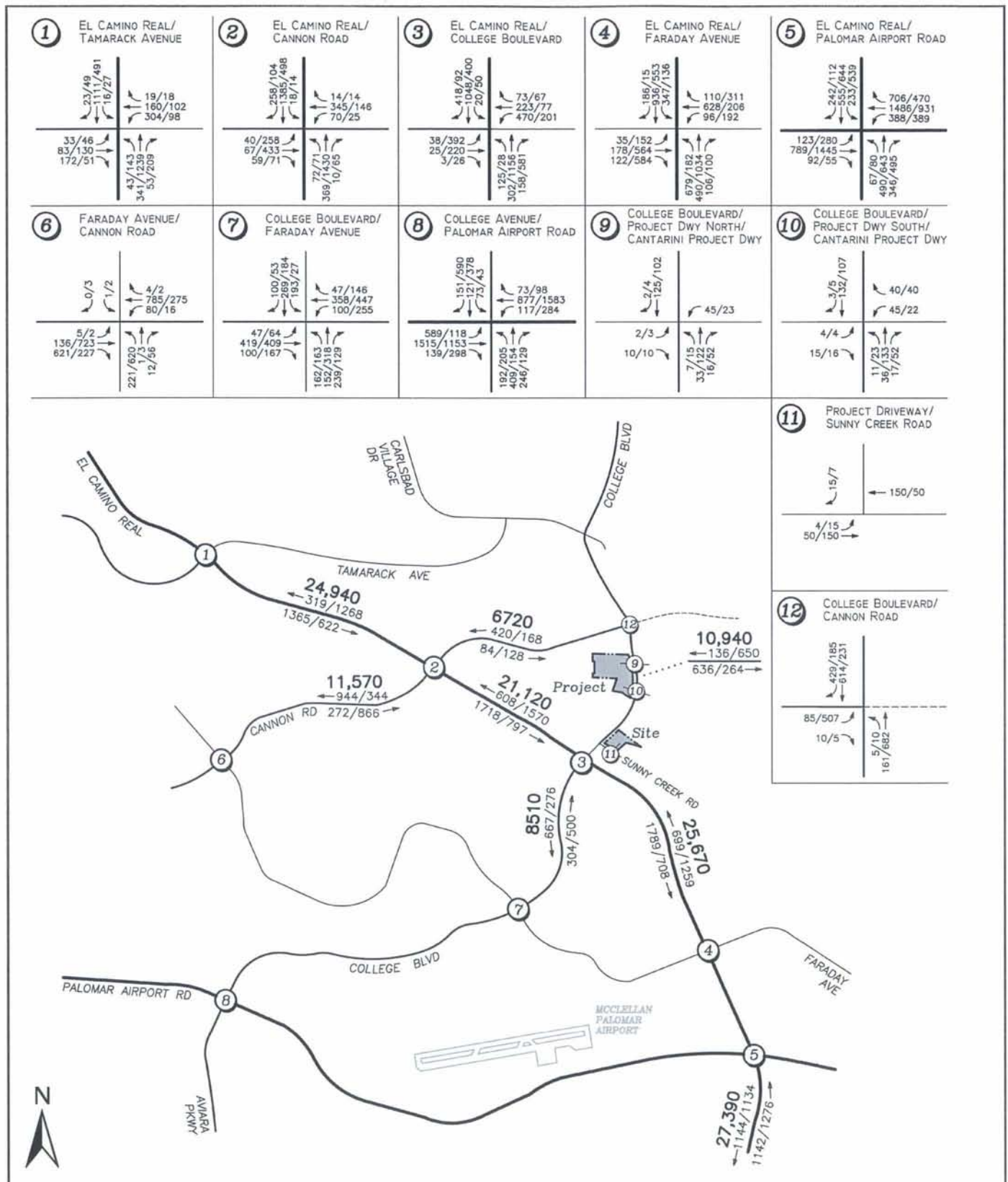
c. Δ denotes project induced ICU increase.

d. Intersection not yet built.

e. Two-Way Stop Controlled – Minor Street Left-turn delay reported.

Source: LLG Engineers, 2010.

| ICU | LOS |
|-----------------|-----|
| 0.0 \leq 0.55 | A |
| 0.56 to 0.64 | B |
| 0.65 to 0.73 | C |
| 0.74 to 0.82 | D |
| 0.83 to 0.91 | E |
| > 0.92 | F |



SOURCE: Linscott Law & Greenspan, 2010

7/12/10



Dos Colinas EIR

Existing With Project Traffic Volumes
Without Cannon Road Extension

FIGURE
5.2-5

TABLE 5.2-7
Existing With Project Street Segment Operations

| Street Segment | Direction | Peak Hour | Capacity ^a | Existing | | | Existing with Project | | | Project Δ^d | Significant Project Impact? |
|---|-----------|-----------|-----------------------|----------|------------------|------------------|-----------------------|-------|-----|--------------------|-----------------------------|
| | | | | Volume | V/C ^b | LOS ^c | Volume | V/C | LOS | | |
| El Camino Real | | | | | | | | | | | |
| Tamarack Avenue to Cannon Road | NB | AM | 3,600 | 310 | 0.086 | A | 319 | 0.089 | A | 0.003 | None |
| | | PM | 3,600 | 1260 | 0.350 | A | 1268 | 0.352 | A | 0.002 | None |
| | SB | AM | 3,600 | 1360 | 0.378 | A | 1365 | 0.379 | A | 0.001 | None |
| | | PM | 3,600 | 610 | 0.169 | A | 622 | 0.173 | A | 0.004 | None |
| Cannon Road to College Boulevard | NB | AM | 5,400 | 720 | 0.133 | A | 608 | 0.113 | A | -0.020 | None |
| | | PM | 5,400 | 2200 | 0.407 | A | 1570 | 0.291 | A | -0.116 | None |
| | SB | AM | 5,400 | 2340 | 0.433 | A | 1718 | 0.318 | A | -0.115 | None |
| | | PM | 5,400 | 1030 | 0.191 | A | 797 | 0.148 | A | -0.043 | None |
| College Boulevard to Faraday Avenue | NB | AM | 5,400 | 690 | 0.128 | A | 699 | 0.129 | A | 0.001 | None |
| | | PM | 5,400 | 1240 | 0.230 | A | 1259 | 0.233 | A | 0.003 | None |
| | SB | AM | 5,400 | 1780 | 0.330 | A | 1789 | 0.331 | A | 0.001 | None |
| | | PM | 5,400 | 700 | 0.130 | A | 708 | 0.131 | A | 0.001 | None |
| Palomar Airport Road to Camino Vida Roble | NB | AM | 5,400 | 1140 | 0.211 | A | 1142 | 0.211 | A | 0.000 | None |
| | | PM | 5,400 | 1270 | 0.235 | A | 1276 | 0.236 | A | 0.001 | None |
| | SB | AM | 5,400 | 1140 | 0.211 | A | 1144 | 0.212 | A | 0.001 | None |
| | | PM | 5,400 | 1130 | 0.209 | A | 1134 | 0.210 | A | 0.001 | None |
| Cannon Road | | | | | | | | | | | |
| Faraday Avenue to El Camino Real | EB | AM | 3,600 | 270 | 0.075 | A | 272 | 0.076 | A | 0.001 | None |
| | | PM | 3,600 | 860 | 0.239 | A | 866 | 0.241 | A | 0.002 | None |
| | WB | AM | 3,600 | 940 | 0.261 | A | 944 | 0.262 | A | 0.001 | None |
| | | PM | 3,600 | 340 | 0.094 | A | 344 | 0.096 | A | 0.002 | None |
| El Camino Real to College Boulevard | EB | AM | 3,600 | 210 | 0.058 | A | 84 | 0.023 | A | -0.035 | None |
| | | PM | 3,600 | 1070 | 0.297 | A | 128 | 0.036 | A | -0.261 | None |
| | WB | AM | 1,800 | 1050 | 0.583 | A | 420 | 0.233 | A | -0.350 | None |
| | | PM | 1,800 | 420 | 0.233 | A | 168 | 0.093 | A | -0.140 | None |
| College Boulevard | | | | | | | | | | | |
| Faraday Avenue to El Camino Real | NB | AM | 3,600 | 300 | 0.083 | A | 304 | 0.084 | A | 0.001 | None |
| | | PM | 3,600 | 490 | 0.136 | A | 500 | 0.139 | A | 0.003 | None |
| | SB | AM | 3,600 | 660 | 0.183 | A | 667 | 0.185 | A | 0.002 | None |
| | | PM | 3,600 | 270 | 0.075 | A | 276 | 0.077 | A | 0.002 | None |

TABLE 5.2-7
Existing With Project Street Segment Operations (cont'd.)

| Street Segment | Direction | Peak Hour | Capacity ^a | Existing | Existing with Project | Project Δ^d | Significant Project Impact? | | | | |
|-------------------------------|-----------|-----------|-----------------------|----------|-----------------------|--------------------|-----------------------------|-------|---|-------|------|
| College Boulevard (cont'd.) | | | | | | | | | | | |
| El Camino Real to Cannon Road | NB | AM | 3,600 | 95 | 0.026 | A | 136 | 0.038 | A | 0.012 | None |
| | | PM | 3,600 | 512 | 0.142 | A | 650 | 0.181 | A | 0.039 | None |
| | SB | AM | 1,800 | 429 | 0.119 | A | 636 | 0.177 | A | 0.058 | None |
| | | PM | 1,800 | 185 | 0.051 | A | 264 | 0.073 | A | 0.022 | None |

Notes: a Capacity based on 1,800 vehicles per lane per hour

b. Volume to Capacity ratio

c. Level of Service

d. Project-induced increase in V/C

e. Segment not yet built.

Source: ILG Engineers, 2010

| LOS | V/C |
|-----|-----------|
| A | <0.6 |
| B | 0.61-0.70 |
| C | 0.71-0.80 |
| D | 0.81-0.90 |
| E | 0.91-1.0 |
| F | >1.0 |

Camino Real by the project. Since all street segments are expected to operate at acceptable levels of service (no worse than level of service D), no impacts are identified.

5.2.3.4 Year 2020 Conditions

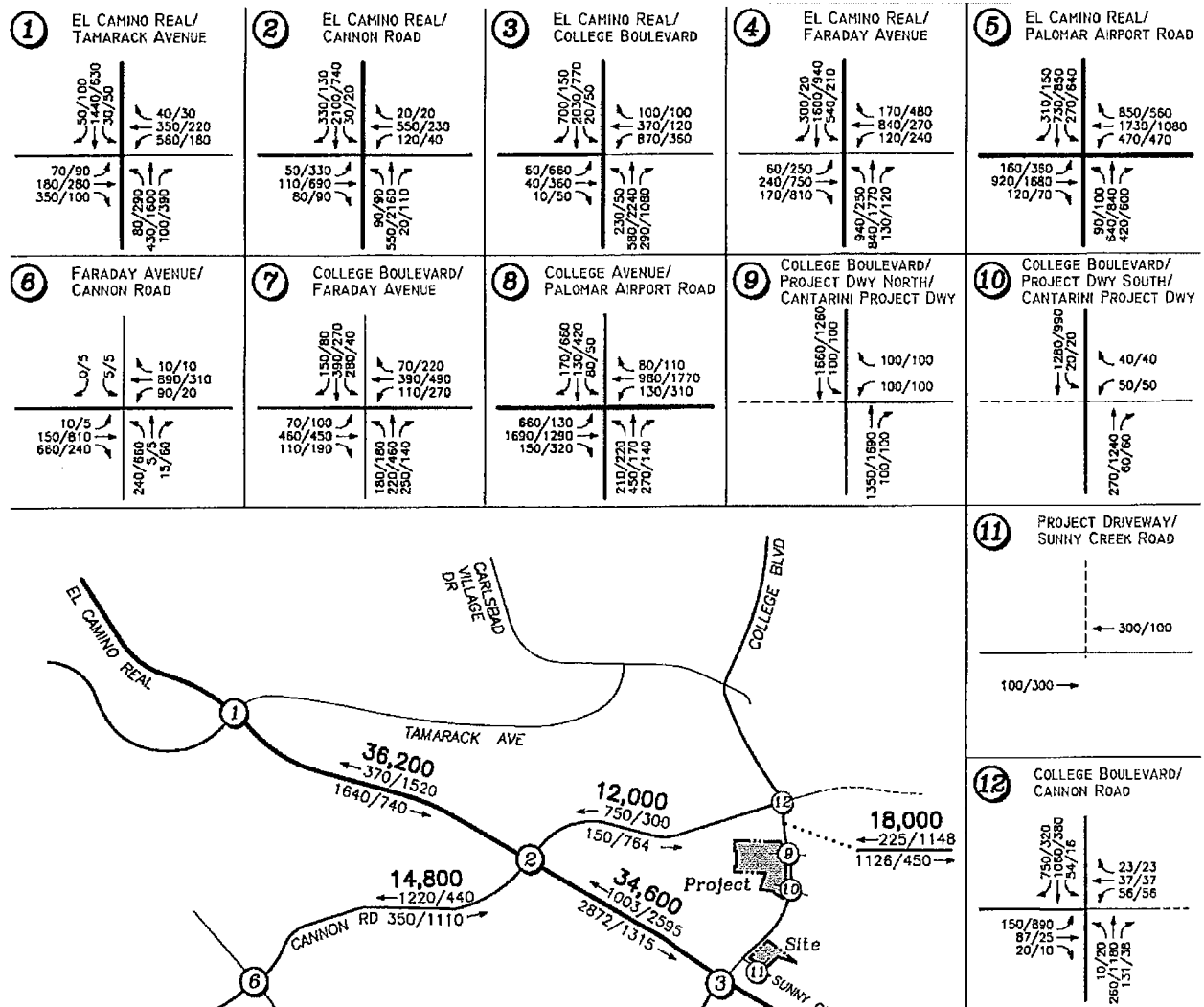
Cumulative traffic conditions were evaluated using the *North County SANDAG Series 11 Model (Year 2020)*. The forecast Model contains planned and existing developments land use information throughout the San Diego County. In particular, the City of Carlsbad requested that the following projects be included in the near-term model run.

- | | |
|---|------------------------------|
| 1. Cantarini Ranch | 10. High School Project |
| 2. Carlsbad Oaks North | 11. Legoland Hotel |
| 3. Emerald Pointe Estates | 12. Poinsettia Place |
| 4. Alga Norte Community Park | 13. Carlsbad Medical Center |
| 5. Mammoth Professional Office Building | 14. Westfield Mall Expansion |
| 6. Robertson Ranch Master Plan | 15. Aviara |
| 7. Holly Springs | 16. Palomar Commons |
| 8. Bressi Ranch Project | 17. Lowe's Center |
| 9. First Responders Training Center | |

A. Intersections

Figure 5.2-6 shows the Year 2020 without Project traffic volumes without the Cannon Road Extension and Figure 5.2-7 shows the Year 2020 with Project traffic volumes without the Cannon Road Extension. Table 5.2-8 shows the Year 2020 with and without Project traffic conditions. As shown, all intersections included in the traffic study area are calculated to operate at LOS D or better, except for the following seven intersections calculated to operate at LOS E or F:

- (#1) El Camino Real/Tamarack Avenue (LOS F/E during the AM/PM peak hours)
- (#2) El Camino Real/Cannon Road (LOS F during the PM peak hour)
- (#3) El Camino Real/College Boulevard (LOS F during the AM/PM peak hours)
- (#4) El Camino Real/Faraday Avenue (LOS F during the AM/PM peak hours)
- (#5) El Camino Real/Palomar Airport Road (LOS F during the PM peak hour)
- (#6) Cannon Road/Faraday Avenue (LOS F during the PM peak hour)
- (#8) College Boulevard/Palomar Airport Road (LOS E/F during the AM/PM peak hours)



SOURCE: Linscott Law & Greenspan, 2010

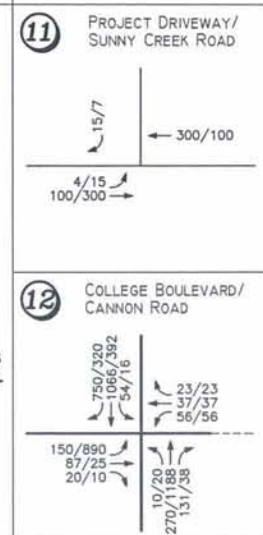
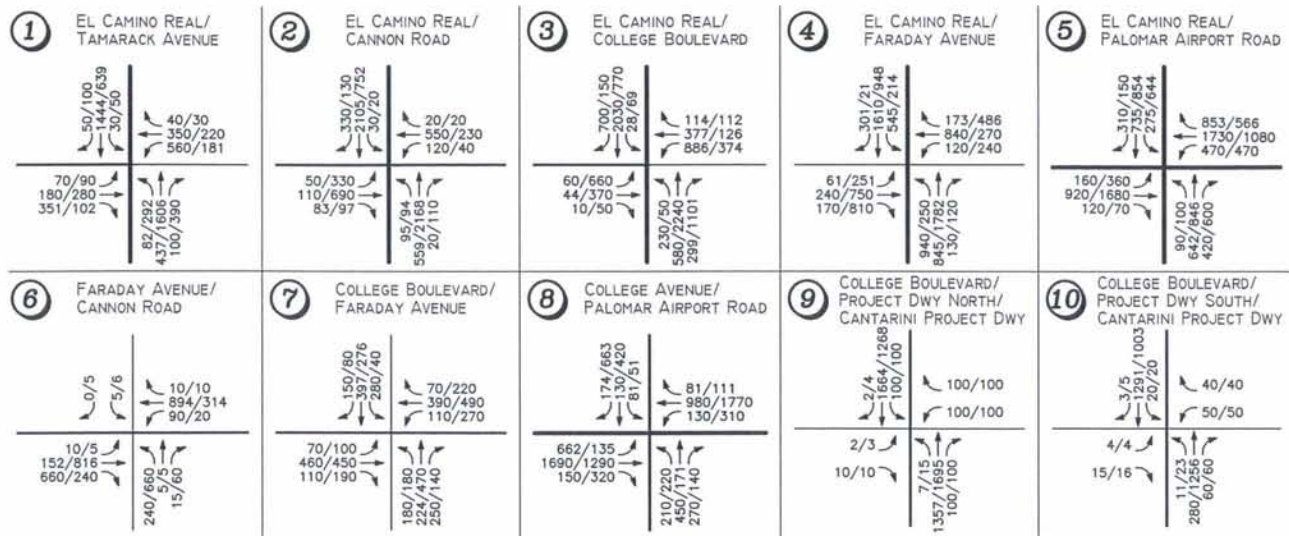
3/31/10



Dos Colinas EIR

Year 2020 Traffic Volumes
Without Cannon Road Extension

FIGURE
5.2-6



SOURCE: Linscott Law & Greenspan, 2010

7/12/10



Dos Colinas EIR

Year 2020 With Project Traffic Volumes Without Cannon Road Extension

FIGURE
5.2-7

TABLE 5.2-8
Year 2020 Intersection Operations

| Intersection | Traffic Control | Peak Hour | Year 2020 | | Year 2020 with Project | | Project Δ^c | Significant Project Impact? |
|---|-------------------|-----------|--------------------|------------------|------------------------|-----|--------------------|-----------------------------|
| | | | Delay ^a | LOS ^b | Delay | LOS | | |
| 1. El Camino Real/Tamarack Avenue | Signal | AM | 152.7 | F | 154.0 | F | 1.3 | None |
| | | PM | 76.1 | E | 76.4 | E | 0.3 | None |
| 2. El Camino Real/Cannon Road | Signal | AM | 37.4 | D | 38.2 | D | 0.8 | None |
| | | PM | 118.4 | F | 119.3 | F | 0.9 | None |
| 3. El Camino Real/College Boulevard | Signal | AM | 182.2 | F | 183.0 | F | 0.8 | None |
| | | PM | 83.4 | F | 84.8 | F | 1.4 | None |
| 4. El Camino Real/Faraday Avenue | Signal | AM | 133.4 | F | 134.1 | F | 0.7 | None |
| | | PM | 131.0 | F | 131.9 | F | 0.9 | None |
| 5. El Camino Real/Palomar Airport Road | Signal | AM | 52.6 | D | 52.8 | D | 0.2 | None |
| | | PM | 110.5 | F | 111.1 | F | 0.6 | None |
| 6. Cannon Road/Faraday Avenue | Signal | AM | 37.6 | D | 38.2 | D | 0.6 | None |
| | | PM | 113.2 | F | 114.5 | F | 1.3 | None |
| 7. College Boulevard/Faraday Avenue | Signal | AM | 27.5 | C | 27.5 | C | 0.0 | None |
| | | PM | 32.6 | C | 32.8 | C | 0.3 | None |
| 8. College Boulevard/Palomar Airport Road | Signal | AM | 59.3 | E | 59.6 | E | 0.3 | None |
| | | PM | 90.7 | F | 91.5 | F | 0.8 | None |
| 9. College Boulevard/Project Driveway North/Cantarini Project Driveway | Signal | AM | 14.4 | B | 18.2 | B | 3.8 | None |
| | | PM | 20.1 | C | 24.5 | C | 4.4 | None |
| 10. College Boulevard/Project Driveway South/Cantarini Project Driveway | Signal | AM | 9.6 | A | 14.6 | B | 5.0 | None |
| | | PM | 10.6 | B | 10.9 | B | 0.3 | None |
| 11. Project Driveway/Sunny Creek Road | TWSC ^d | AM | NA ^e | NA | 10.2 | B | - | None |
| | | PM | NA | NA | 8.8 | B | - | None |
| 12. College Boulevard/Cannon Road | Signal | AM | 15.3 | B | 15.4 | B | 0.1 | None |
| | | PM | 37.0 | D | 37.1 | D | 0.4 | None |

- Notes: a. Delay expressed in seconds
b. Level of Service
c. Δ denotes Project Induced Delay
d. Two-Way Stop Controlled – Minor Street Left-turn Delay Reported.
e. NA – Not Applicable

Source: LLG Engineers, 2010.

| SIGNALIZED | | UNSIGNALIZED | |
|----------------------|-----|----------------------|-----|
| Delay/LOS Thresholds | | Delay/LOS Thresholds | |
| Delay | LOS | Delay | LOS |
| 0.0 ≤ 10.0 | A | 0.0 to 10.0 | A |
| 10.01 to 20.0 | B | 10.1 to 15.0 | B |
| 20.01 to 35.0 | C | 15.1 to 25.0 | C |
| 35.1 to 55.0 | D | 25.1 to 35.0 | D |
| 55.1 to 80.0 | E | 35.1 to 50.0 | E |
| > 80.1 | F | > 50.1 | F |

These seven intersections, which are calculated to operate at LOS E or F without the project in the Year 2020, would continue to operate at the same LOS with the addition of Project traffic. Based on the established significant criteria, the seven intersections would not exceed thresholds; therefore, no significant project related impact would occur.

B. Street Segments

As shown in Table 5.2-9, under the Year 2020 without project conditions, all street segments included in the traffic study area are expected to operate at LOS A, except southbound College Boulevard to Faraday Avenue during the AM peak hour, which is expected to operate at LOS B. With the addition of project traffic, street segments are calculated to continue to operate at LOS B or better. All segments evaluated do not exceed LOS D during peak hours. Therefore, no significant project traffic impacts are expected in Year 2020.

5.2.3.5 Year 2030 Conditions

A. Intersections

Figure 5.2-8 depicts the Year 2030 without project traffic volumes, with the Cannon Road extension. Figure 5.2-9 depicts the Year 2030 with Project traffic volumes, with the Cannon Road extension. Table 5.2-10 shows Year 2030 intersection levels of service with and without project traffic. As shown, all intersections included in the traffic study area are calculated to operate at LOS D or better, except for seven intersections calculated to operate at LOS E or F (intersections #1 through #6 and #8). These seven intersections, which are calculated to operate at LOS E or F without the project in the Year 2030, would continue to operate at the same LOS with the addition of Project traffic. Based on the established significance criteria, the seven intersections would not exceed thresholds; therefore, no significant project related impacts would occur.

B. Street Segments

As shown in Table 5.2-11, under Year 2030 without project conditions, all of the study area street segments are expected to operate at LOS C or better. These street segments would continue to operate at LOS C or better under the Year 2030 with Project conditions; therefore, no significant impacts would occur.

5.2.3.5 Queue Operations

An analysis of queue operations was also conducted for existing, Year 2020, and Year 2030 Conditions. Section 10.0 Queue Operations, and Appendix I of the traffic technical report (EIR Volume II, Appendix B), provide a detailed analysis of queue operations. As shown, the project does not cause queues to exceed the available storage or add more than five vehicles or 125 feet of queue in the Existing and Year 2020 Conditions. For the Year 2030, the project does not cause queues to exceed the available storage or add more than five vehicles or 125 feet of queue except at northbound right-turn movement and eastbound left-turn movement at the intersection of El Camino Real/College Boulevard.

TABLE 5.2-9
Year 2020 Street Segment Operations

| Street Segment | Direction | Peak Hour | Capacity ^a | Year 2020 | | | Year 2020 with Project | | | Project Δ^d | Significant Project Impact? |
|---|-----------|-----------|-----------------------|-----------|------------------|------------------|------------------------|-------|-----|--------------------|-----------------------------|
| | | | | Volume | V/C ^b | LOS ^c | Volume | V/C | LOS | | |
| El Camino Real | | | | | | | | | | | |
| Tamarack Avenue to Cannon Road | NB | AM | 3,600 | 370 | 0.103 | A | 379 | 0.105 | A | 0.002 | None |
| | | PM | 3,600 | 1520 | 0.422 | A | 1528 | 0.424 | A | 0.002 | None |
| | SB | AM | 3,600 | 1640 | 0.456 | A | 1645 | 0.457 | A | 0.001 | None |
| | | PM | 3,600 | 740 | 0.206 | A | 752 | 0.209 | A | 0.003 | None |
| Cannon Road to College Boulevard | NB | AM | 5,400 | 1003 | 0.186 | A | 1017 | 0.188 | A | 0.002 | None |
| | | PM | 5,400 | 2595 | 0.481 | A | 2607 | 0.483 | A | 0.002 | None |
| | SB | AM | 5,400 | 2872 | 0.532 | A | 2880 | 0.533 | A | 0.001 | None |
| | | PM | 5,400 | 1315 | 0.244 | A | 1334 | 0.247 | A | 0.003 | None |
| College Boulevard to Faraday Avenue | NB | AM | 5,400 | 1430 | 0.265 | A | 1439 | 0.266 | A | 0.001 | None |
| | | PM | 5,400 | 2570 | 0.476 | A | 2589 | 0.479 | A | 0.003 | None |
| | SB | AM | 5,400 | 3690 | 0.683 | B | 3699 | 0.685 | B | 0.002 | None |
| | | PM | 5,400 | 1450 | 0.269 | A | 1458 | 0.270 | A | 0.001 | None |
| Palomar Airport Road to Camino Vida Roble | NB | AM | 5,400 | 1480 | 0.274 | A | 1482 | 0.274 | A | 0.000 | None |
| | | PM | 5,400 | 1640 | 0.304 | A | 1646 | 0.305 | A | 0.001 | None |
| | SB | AM | 5,400 | 1480 | 0.274 | A | 1484 | 0.275 | A | 0.001 | None |
| | | PM | 5,400 | 1460 | 0.270 | A | 1464 | 0.271 | A | 0.001 | None |
| Cannon Road | | | | | | | | | | | |
| Faraday Avenue to El Camino Real | EB | AM | 3,600 | 350 | 0.097 | A | 352 | 0.098 | A | 0.001 | None |
| | | PM | 3,600 | 1110 | 0.308 | A | 1116 | 0.310 | A | 0.002 | None |
| | WB | AM | 3,600 | 1220 | 0.339 | A | 1224 | 0.340 | A | 0.001 | None |
| | | PM | 3,600 | 440 | 0.122 | A | 444 | 0.123 | A | 0.001 | None |
| El Camino Real to College Boulevard | EB | AM | 3,600 | 150 | 0.042 | A | 150 | 0.042 | A | 0.000 | None |
| | | PM | 3,600 | 764 | 0.212 | A | 764 | 0.212 | A | 0.000 | None |
| | WB | AM | 1,800 | 750 | 0.417 | A | 750 | 0.417 | A | 0.000 | None |
| | | PM | 1,800 | 300 | 0.167 | A | 300 | 0.167 | A | 0.000 | None |

TABLE 5.2-9
Year 2020 Street Segment Operations (cont'd.)

| Street Segment | Direction | Peak Hour | Capacity ^a | Year 2020 | | | Year 2020 with Project | | | Project Δ^d | Significant Project Impact? |
|----------------------------------|-----------|-----------|-----------------------|-----------|-------|---|------------------------|-------|---|--------------------|-----------------------------|
| College Boulevard | | | | | | | | | | | |
| Faraday Avenue to El Camino Real | NB | AM | 3,600 | 620 | 0.172 | A | 624 | 0.173 | A | 0.001 | None |
| | | PM | 3,600 | 1020 | 0.283 | A | 1030 | 0.286 | A | 0.003 | None |
| | SB | AM | 3,600 | 1370 | 0.381 | A | 1377 | 0.383 | A | 0.002 | None |
| | | PM | 3,600 | 560 | 0.156 | A | 566 | 0.157 | A | 0.001 | None |
| El Camino Real to Cannon Road | NB | AM | 3,600 | 225 | 0.063 | A | 235 | 0.065 | A | 0.002 | None |
| | | PM | 3,600 | 1148 | 0.319 | A | 1156 | 0.321 | A | 0.002 | None |
| | SB | AM | 3,600 | 1126 | 0.313 | A | 1132 | 0.314 | A | 0.001 | None |
| | | PM | 3,600 | 450 | 0.125 | A | 462 | 0.128 | A | 0.003 | None |

Notes: a. Capacity based on 1,800 vehicles per lane per hour

b. Volume to Capacity ratio

c. Level of Service

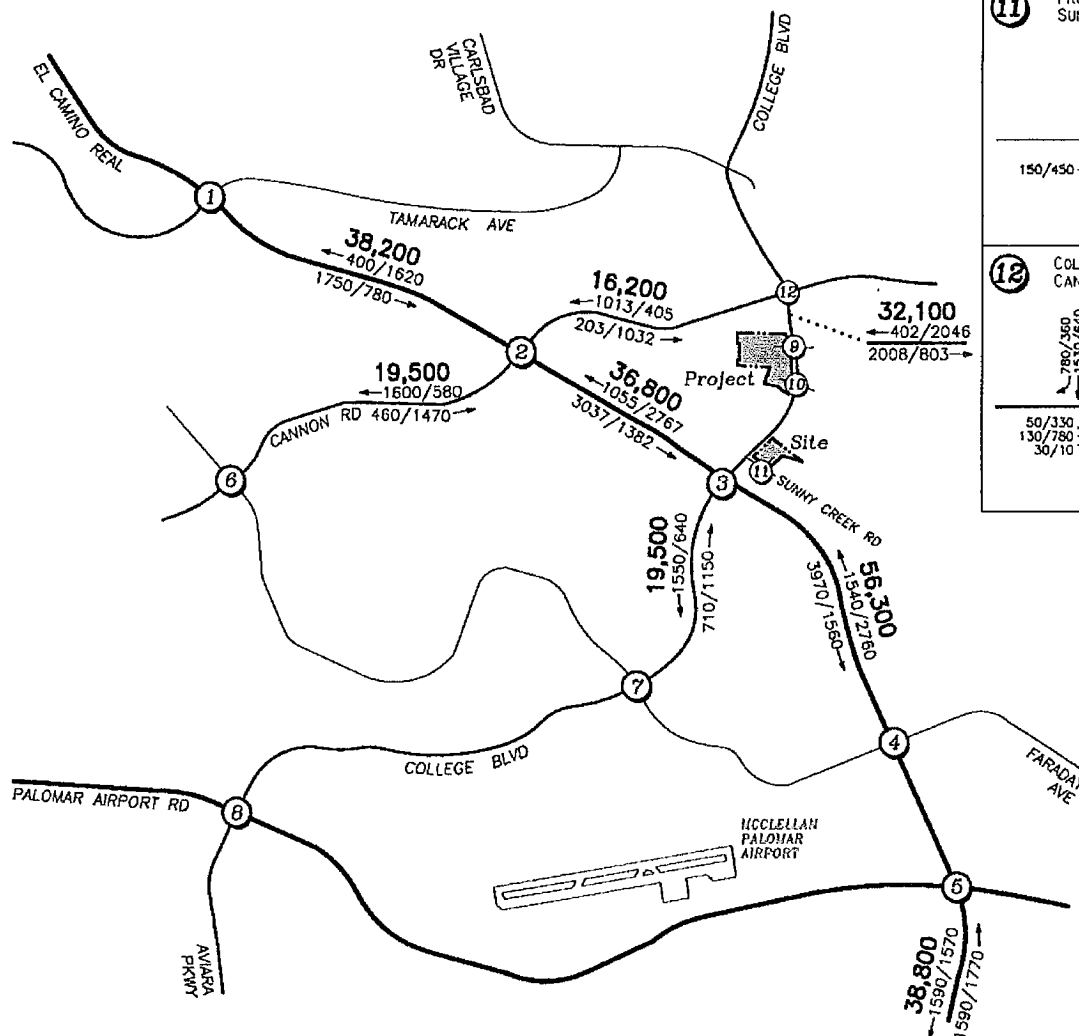
d. Project-induced increase in V/C

Source: ILG Engineers, 2010.

| LOS | V/C |
|-----|-----------|
| A | <0.6 |
| B | 0.61-0.70 |
| C | 0.71-0.80 |
| D | 0.81-0.90 |
| E | 0.91-1.0 |
| F | >1.0 |

| | | | | |
|---|---|--|--|---|
| 1 EL CAMINO REAL/ TAMARACK AVENUE | 2 EL CAMINO REAL/ CANNON ROAD | 3 EL CAMINO REAL/ COLLEGE BOULEVARD | 4 EL CAMINO REAL/ FARADAY AVENUE | 5 EL CAMINO REAL/ PALOMAR AIRPORT ROAD |
| 6 FARADAY AVENUE/ CANNON ROAD | 7 COLLEGE BOULEVARD/ FARADAY AVENUE | 8 COLLEGE AVENUE/ PALOMAR AIRPORT ROAD | 9 COLLEGE BOULEVARD/ PROJECT DWY NORTH/ CANTARINI PROJECT DWY | 10 COLLEGE BOULEVARD/ PROJECT DWY SOUTH/ CANTARINI PROJECT DWY |

| | |
|---|---|
| 11 PROJECT DRIVEWAY/ SUNNY CREEK ROAD | 12 COLLEGE BOULEVARD/ CANNON ROAD |
|---|---|



SOURCE: Linscott Law & Greenspan, 2010

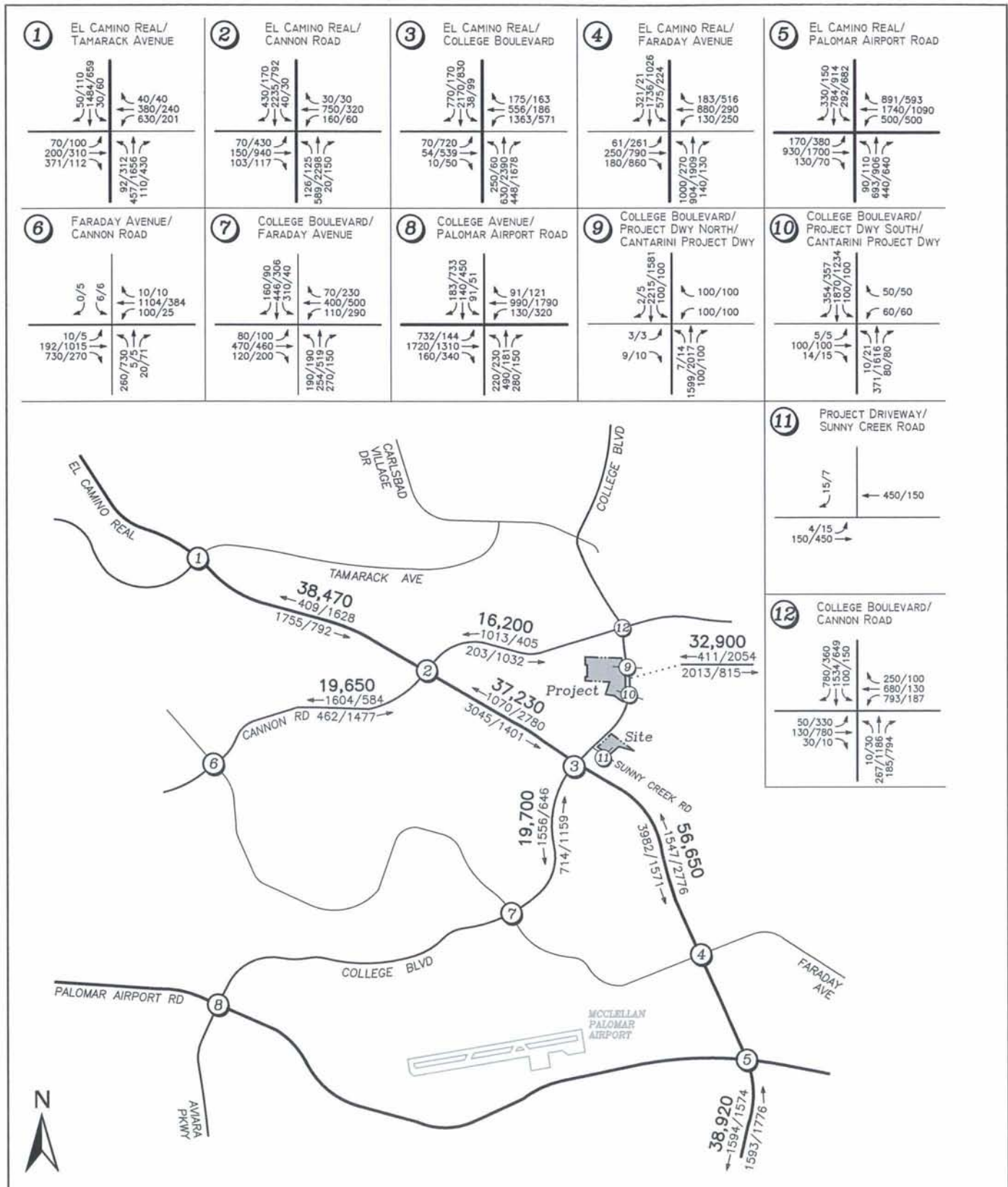
3/31/10



Dos Colinas EIR

Year 2030 Traffic Volumes With Cannon Road Extension

FIGURE
5.2-8



SOURCE: Linscott Law & Greenspan, 2010

7/12/10



Dos Colinas EIR

Year 2030 With Project Traffic Volumes
With Cannon Road Extension

FIGURE
5.2-9

TABLE 5.2-10
Year 2030 Intersection Operations

| Intersection | Traffic Control | Peak Hour | Year 2030 | | Year 2030 with Project | | Project Δ^c | Significant Project Impact? |
|--|-------------------|-----------|--------------------|------------------|------------------------|-----|--------------------|-----------------------------|
| | | | Delay ^a | LOS ^b | Delay | LOS | | |
| 1. El Camino Real/Tamarack Avenue | Signal | AM | 185.6 | F | 186.1 | F | 0.5 | None |
| | | PM | 104.3 | F | 105.1 | F | 0.8 | None |
| 2. El Camino Real/Cannon Road | Signal | AM | 76.1 | E | 76.7 | E | 0.6 | None |
| | | PM | 147.7 | F | 148.5 | F | 0.8 | None |
| 3. El Camino Real/College Boulevard | Signal | AM | 296.4 | F | 297.2 | F | 0.8 | None |
| | | PM | 251.6 | F | 251.7 | F | 0.1 | None |
| 4. El Camino Real/Faraday Avenue | Signal | AM | 156.6 | F | 157.3 | F | 0.7 | None |
| | | PM | 153.7 | F | 155.5 | F | 1.8 | None |
| 5. El Camino Real/Palomar Airport Road | Signal | AM | 57.6 | E | 57.7 | E | 0.1 | None |
| | | PM | 123.1 | F | 123.6 | F | 0.5 | None |
| 6. Cannon Road/Faraday Avenue | Signal | AM | 78.4 | E | 79.2 | E | 0.8 | None |
| | | PM | 116.4 | F | 116.9 | F | 0.5 | None |
| 7. College Boulevard/Faraday Avenue | Signal | AM | 29.0 | C | 29.1 | C | 0.1 | None |
| | | PM | 36.4 | D | 36.6 | D | 0.2 | None |
| 8. College Boulevard/Palomar Airport Road | Signal | AM | 73.7 | E | 74.8 | E | 1.1 | None |
| | | PM | 102.7 | F | 102.9 | F | 0.2 | None |
| 9. College Boulevard/Project Driveway North / Cantarini Project Driveway | Signal | AM | 21.6 | C | 37.2 | D | 15.6 | None |
| | | PM | 39.2 | D | 43.4 | D | 4.2 | None |
| 10. College Boulevard/Project Driveway South/Cantarini Project Driveway | Signal | AM | 39.3 | D | 39.4 | D | 0.1 | None |
| | | PM | 21.2 | C | 31.1 | C | 9.9 | None |
| 11. Project Driveway/Sunny Creek Road | TWSC ^d | AM | NA ^e | NA | 11.4 | B | - | None |
| | | PM | NA | NA | 9.1 | A | - | None |
| 12. College Boulevard/Cannon Road | Signal | AM | 48.0 | D | 48.1 | D | 0.1 | None |
| | | PM | 38.7 | D | 38.9 | D | 0.1 | None |

Notes: a. Intersection Capacity Utilization.
b. Level of Service
c. Δ denotes Project Induced Delay
d. Two-Way Stop Controlled – Minor Street Left-turn Delay Reported.
e. NA – Not Applicable

Source: LLG Engineers, 2010

TABLE 5.2-11
Year 2030 Street Segment Operations

| Street Segment | Direction | Peak Hour | Capacity ^a | Year 2030 | | | Year 2030 with Project | | | Project Δ ^d | Significant Project Impact? |
|---|-----------|-----------|-----------------------|-----------|------------------|------------------|------------------------|-------|-----|------------------------|-----------------------------|
| | | | | Volume | V/C ^b | LOS ^c | Volume | V/C | LOS | | |
| El Camino Real | | | | | | | | | | | |
| Tamarack Avenue to Cannon Road | NB | AM | 3,600 | 400 | 0.111 | A | 409 | 0.114 | A | 0.003 | None |
| | | PM | 3,600 | 1620 | 0.450 | A | 1628 | 0.452 | A | 0.002 | None |
| | SB | AM | 3,600 | 1750 | 0.486 | A | 1755 | 0.488 | A | 0.002 | None |
| | | PM | 3,600 | 780 | 0.217 | A | 792 | 0.220 | A | 0.003 | None |
| Cannon Road to College Boulevard | NB | AM | 5,400 | 1055 | 0.195 | A | 1070 | 0.198 | A | 0.003 | None |
| | | PM | 5,400 | 2767 | 0.512 | A | 2780 | 0.515 | A | 0.003 | None |
| | SB | AM | 5,400 | 3037 | 0.562 | A | 3045 | 0.564 | A | 0.002 | None |
| | | PM | 5,400 | 1382 | 0.256 | A | 1401 | 0.259 | A | 0.003 | None |
| College Boulevard to Faraday Avenue | NB | AM | 5,400 | 1540 | 0.285 | A | 1547 | 0.286 | A | 0.001 | None |
| | | PM | 5,400 | 2760 | 0.511 | A | 2776 | 0.514 | A | 0.003 | None |
| | SB | AM | 5,400 | 3970 | 0.735 | C | 3982 | 0.737 | C | 0.002 | None |
| | | PM | 5,400 | 1560 | 0.289 | A | 1571 | 0.291 | A | 0.002 | None |
| Palomar Airport Road to Camino Vida Roble | NB | AM | 5,400 | 1590 | 0.294 | A | 1593 | 0.295 | A | 0.001 | None |
| | | PM | 5,400 | 1770 | 0.328 | A | 1776 | 0.329 | A | 0.001 | None |
| | SB | AM | 5,400 | 1590 | 0.294 | A | 1594 | 0.295 | A | 0.001 | None |
| | | PM | 5,400 | 1570 | 0.291 | A | 1574 | 0.291 | A | 0.000 | None |

TABLE 5.2-11
Year 2030 Street Segment Operations (cont'd.)

| Street Segment | Direction | Peak Hour | Capacity ^a | Year 2030 | | Year 2030 with Project | | Project Δ ^d | Significant Project Impact? | | |
|-------------------------------------|-----------|-----------|-----------------------|-----------|-------|------------------------|------|------------------------|-----------------------------|-------|------|
| Cannon Road | | | | | | | | | | | |
| Faraday Avenue to El Camino Real | EB | AM | 3,600 | 460 | 0.128 | A | 462 | 0.128 | A | 0.000 | None |
| | | PM | 3,600 | 1470 | 0.408 | A | 1477 | 0.410 | A | 0.002 | None |
| | WB | AM | 3,600 | 1600 | 0.444 | A | 1604 | 0.446 | A | 0.002 | None |
| | | PM | 3,600 | 580 | 0.161 | A | 584 | 0.162 | A | 0.001 | None |
| El Camino Real to College Boulevard | EB | AM | 5,400 | 203 | 0.038 | A | 203 | 0.038 | A | 0.000 | None |
| | | PM | 5,400 | 1032 | 0.191 | A | 1032 | 0.191 | A | 0.000 | None |
| | WB | AM | 5,400 | 1013 | 0.188 | A | 1013 | 0.188 | A | 0.000 | None |
| | | PM | 5,400 | 405 | 0.075 | A | 405 | 0.075 | A | 0.000 | None |
| College Boulevard | | | | | | | | | | | |
| Faraday Avenue to El Camino Real | NB | AM | 3,600 | 710 | 0.197 | A | 714 | 0.198 | A | 0.001 | None |
| | | PM | 3,600 | 1150 | 0.319 | A | 1159 | 0.322 | A | 0.003 | None |
| | SB | AM | 3,600 | 1550 | 0.431 | A | 1556 | 0.432 | A | 0.001 | None |
| | | PM | 3,600 | 640 | 0.178 | A | 646 | 0.179 | A | 0.001 | None |
| El Camino Real to Cannon Road | NB | AM | 3,600 | 402 | 0.112 | A | 411 | 0.114 | A | 0.002 | None |
| | | PM | 3,600 | 2046 | 0.568 | A | 2054 | 0.571 | A | 0.003 | None |
| | SB | AM | 3,600 | 2008 | 0.558 | A | 2013 | 0.559 | A | 0.001 | None |
| | | PM | 3,600 | 803 | 0.223 | A | 815 | 0.226 | A | 0.003 | None |

Notes: a Capacity based on 1,800 vehicles per lane per hour

b. Volume to Capacity ratio

c. Level of Service

d. Project-induced increase in V/C

Source: ILG Engineers, 2010

LOS

V/C

A

B

C

D

E

F

<0.6

0.61-0.70

0.71-0.80

0.81-0.90

0.91-1.0

>1.0

A. Site Access Review

CCRC Site

Access to the CCRC site will be provided via two driveways on College Boulevard. Both driveways are planned to align with the future driveways associated with Cantarini Ranch Project. It should also be noted that the Cantarini Ranch Project is further along in the development process and has been conditioned to grade the entire College Boulevard right-of-way between Cannon Road and Sunny Creek Road, providing core improvements and half-width improvements (transitions, curb, gutter, sidewalk) along its project frontage as well as the future signalization of the project's driveways per the City's discretion. However, if the Cantarini Ranch Project does not proceed with development on a schedule suitable for Dos Colinas, the Dos Colinas Project will be responsible for signalization of the two driveways prior to the issuance of occupancy permits. A sight distance analysis should be conducted at both the driveways to verify that corner sight distance is available, even though the driveways will be signalized.

Affordable Housing Site

Access to the affordable housing site will be provided via one driveway on Sunny Creek Road. The driveway proposes full movements across a double yellow centerline. Currently, there is a raised median on Sunny Creek Road. The raised median needs to be removed and painted double yellow to allow full access at the driveway. The maximum traffic accessing this site by making a left-turn is 18 peak hour trips. Such a low volume does not warrant a left-turn pocket.

5.2.4 Mitigation Measures

Based on the established Significance Criteria, no capacity related impacts were calculated at the key study area intersections and street segments. Therefore, no mitigation measures are required for the project. However, the following traffic-related improvements and design features will be implemented:

1. Because the project proposes access to College Boulevard, it is required that the project shall provide half-width improvements to College Boulevard along the entire project frontage.
2. The two proposed driveways serving the CCRC site on College Boulevard shall be designed to align with the future driveways associated with Cantarini Ranch Project, and provide adequate corner sight distance. In the instance that Dos Colinas proceeds before Cantarini Ranch, the project shall be made responsible to signalize and energize these two driveways.
3. A traffic signal shall also be installed at the planned intersection of College Boulevard/Cannon Road. The project shall pay a fair-share contribution to the installation of these signals.
4. All internal roadways shall be built to the City of Carlsbad's standards.
5. The raised median on Sunny Creek Road shall to be removed in part to allow full access to the affordable housing site.

5.2.5 Impact After Mitigation

No mitigation measures were identified, as there are no traffic/circulation impacts.

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